

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference HS05004-1	FOR FURTHER ACTION	See item 4 below
International application No. PCT/KR2005/004677	International filing date (<i>day/month/year</i>) 30 December 2005 (30.12.2005)	Priority date (<i>day/month/year</i>) 30 December 2004 (30.12.2004)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant HYOSUNG COPORATION		

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 <i>bis</i> .1(a).																								
2.	This REPORT consists of a total of 4 sheets, including this cover sheet.																								
	In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.																								
3.	<p>This report contains indications relating to the following items:</p> <table style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 20%;">Box No. I</td> <td style="width: 70%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).																								

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Date of issuance of this report 03 July 2007 (03.07.2007)</td> </tr> <tr> <td style="padding: 2px;"> Authorized officer <div style="text-align: center; font-weight: bold; font-size: 1.2em;">Philippe Becamel</div> </td> </tr> </table> e-mail: pt12.pct@wipo.int	Date of issuance of this report 03 July 2007 (03.07.2007)	Authorized officer <div style="text-align: center; font-weight: bold; font-size: 1.2em;">Philippe Becamel</div>
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Authorized officer <div style="text-align: center; font-weight: bold; font-size: 1.2em;">Philippe Becamel</div>			

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

KIM, Hong-Gyun

4F Wooyong Buildong, 637-20 Yoksam-dong, Kangnam-gu
Seoul 135-909 Republic of Korea

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year) 10 MARCH 2006 (10.03.2006)

Applicant's or agent's file reference
HS05004-1

FOR FURTHER ACTION
See paragraph 2 below

International application No. PCT/KR2005/004677	International filing date (day/month/year) 30 DECEMBER 2005 (30.12.2005)	Priority date(day/month/year) 30 DECEMBER 2004 (30.12.2004)
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International Patent Classification (IPC) or both national classification and IPC

D01F 2/00(2006.01)i

Applicant

HYOSUNG COPORATION et al

1. This opinion contains indications relating to the following items:


- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.
For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/KR
 Korean Intellectual Property Office
920 Dunsan-dong, Seo-gu, Daejeon
302-701, Republic of Korea
Facsimile No. 82-42-472-7140

Date of completion of this opinion
09 MARCH 2006 (09.03.2006)

Authorized officer
OH, SANG KYUN

Telephone No.82-42-481-8161



**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/KR2005/004677

Box No. 1 Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ on paper
☐ in electronic form
 - c. time of filing/furnishing
☐ contained in the international application as filed.
☐ filed together with the international application in electronic form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/KR2005/004677

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims 1-7	YES
	Claims	NO
Inventive step (IS)	Claims 1-7	YES
	Claims	NO
Industrial applicability (IA)	Claims 1-7	YES
	Claims	NO

2. Citations and explanations :

Reference is made to the following documents identified in the International Search Report (ISR):

D1 : CA 2400709 A (30 November 2003)
D2 : US 5951933 A (14 September 1999)

The claimed invention relates to a production of a cellulose solution which is homogeneous at low temperatures, by dissolving a small amount of the cellulose powder in concentrated liquid-state NMMO to lower the solidification temperature of NMMO, introducing the low temperature, concentrated liquid state solution having cellulose dissolved and the cellulose powder into a kneader, mixing and swelling the cellulose in the kneader to produce a paste, and then supplying the paste into an extruder to dissolve the paste in a homogeneous solution.

D1 discloses a process for producing a highly homogeneous cellulose solution, in which a mixture of powdered cellulose with polyvinyl alcohol powder is fed in conjunction with concentrated liquid NMMO into a kneader or an extruder to produce the highly homogeneous cellulose solution, or into the kneader to produce a swollen cellulose/polyvinyl alcohol paste.

D2 discloses a processes for film and fiber production involving precipitating cellulose from tertiary amine oxide solutions wherein a water soluble polymer is incorporated into the solution in an amount sufficient to slow precipitation of the cellulose during separation of the cellulose from the tertiary amine oxide.

The feature of the present invention, such as dissolving a small amount of the cellulose powder in concentrated liquid-state NMMO to lower the solidification temperature of NMMO, is not disclosed in D1 and D2. Therefore, the subject matter of claims 1-7 is novel pursuant to PCT Article 33(2).

The subject matter of claims 1-7 is considered to involve an inventive step pursuant to PCT Article 33(3), since it refers to an improved process, such as a method for producing a cellulose solution which is homogeneous at low temperatures, which is not known or even suggested in the prior art, particularly in D1 and D2.

Claims 1-7 also meet the criteria set out in PCT Article 33(4), because all the claims are considered to be industrially applicable.